Nutritional values of tempe inoculated with different strains of Rhizopus: its γ-aminobutyric acid content and antioxidant property

ABSTRACT

The ɔ-aminobutyric acid (GABA) content and antioxidant profile of fermented soybean inoculated with eight different strains of Rhizopus sp. were studied. The ability of these strains, which were obtained from the Centre of Functional Food Cultures (CFFC) collection at MARDI, to produce GABA were compared to wild strains obtained from commercial tempe. Results showed that tempe inoculated with Rhizopus strains of MARDI contained higher GABA, mostly above 0.060 g/100 g dry weight compared to commercial tempe. The highest GABA content was seen in the tempe inoculated with Rhizopus 5351 strain with a concentration of up to 0.154 g/100 g dry weight at 48 h fermentation. The amount of beneficial free and essential amino acids of this tempe were also more than 1.70 g and 0.50 g/100 g dry weight respectively. Tempe inoculated with Rhizopus 5351 strain had the highest sensory score in organoleptic acceptability as evaluated by 14 experienced panellists. In addition, the antioxidant content of this tempe was within the range of commercial tempe. Overall, tempe inoculated with Rhizopus 5351 strain had better nutritional value compared to current commercial tempe available in Malaysia. Obviously, Rhizopus 5351 strain can be introduced as a commercial starter culture for making tempe in Malaysia.

Keyword: Soybean; Rhizopus sp.; Amino acid; GABA; Sensory